

CLAIMS

What is claimed is:

1. A power shaft including a belt retaining geometry, with the power shaft comprising:
 5 a shaft including a normal belt position portion adapted for receiving a belt; and
 a reduced diameter portion formed on the shaft and located adjacent to the normal belt
 position portion;
 wherein the belt can move into the reduced diameter portion of the power shaft during
 operation and the reduced diameter portion creates an alignment tension force on the
 10 belt that operates to return the belt to the normal belt position portion.

2. The power shaft of claim 1, with the reduced diameter portion comprising:
 a first angled portion that angles from a normal diameter of the normal belt position portion
 inwardly partially toward a center of the shaft and tapers to a reduced diameter and at a
 15 first angle from an exterior surface of the shaft;
 a second angled portion that angles outwardly from the reduced diameter and at a second
 angle from the exterior surface of the shaft; and
 a neck region formed between the first angled portion and the second angled portion,
 wherein the neck region transitions from the first angled portion to the second angled
 20 portion.

3. The power shaft of claim 2, with the first angled portion tapering substantially regularly to
 the reduced diameter and at the first angle.

- 25 4. The power shaft of claim 2, with the second angled portion extending at least partially to the
 exterior surface and the normal diameter of the shaft.

5. The power shaft of claim 1, further comprising a first radius formed on a first transition region between the normal belt position portion and the first angled portion, with the first radius forming a substantially smooth transition from the normal belt position portion to the first angled portion.

5

6. The power shaft of claim 1, with the neck region comprising a neck radius forming a substantially smooth transition from the first angled portion to the second angled portion.

7. The power shaft of claim 1, wherein a first angled portion dimension is less than a belt width of the belt.

10

8. A power shaft including a belt retaining geometry, with the power shaft comprising:
a shaft including a normal belt position portion adapted for receiving a belt;
a first angled portion that angles from a normal diameter of the normal belt position portion
inwardly partially toward a center of the shaft and tapers to a reduced diameter and at a
first angle from an exterior surface of the shaft;
a second angled portion that angles outwardly from the reduced diameter and at a second
angle from the exterior surface of the shaft;
a neck region formed between the first angled portion and the second angled portion,
wherein the neck region transitions from the first angled portion to the second angled
portion; and
the belt positioned on the normal belt position portion of the shaft;
wherein the belt can move into the reduced diameter portion of the power shaft during
operation and the reduced diameter portion creates an alignment tension force on the
belt that operates to return the belt to the normal belt position portion.
9. The power shaft of claim 8, with the first angled portion tapering substantially regularly to
the reduced diameter and at the first angle.
10. The power shaft of claim 8, with the second angled portion extending at least partially to the
exterior surface and the normal diameter of the shaft.
11. The power shaft of claim 8, further comprising a first radius formed on a first transition
region between the normal belt position portion and the first angled portion, with the first
radius forming a substantially smooth transition from the normal belt position portion to the
first angled portion.
12. The power shaft of claim 8, with the neck region comprising a neck radius forming a
substantially smooth transition from the first angled portion to the second angled portion.

13. The power shaft of claim 8, wherein a first angled portion dimension is less than a belt width of the belt.

14. A method of forming a power shaft including a belt retaining geometry, the method comprising:

providing a shaft portion including a normal belt position portion adapted for receiving a belt; and

- 5 forming a reduced diameter portion on the shaft and located adjacent to the normal belt position portion;

wherein the belt can move into the reduced diameter portion of the power shaft during operation and the reduced diameter portion creates an alignment tension force on the belt that operates to return the belt to the normal belt position portion.

10

15. The method of claim 14, with forming the reduced diameter portion comprising:

forming a first angled portion that angles from a normal diameter of the normal belt position portion inwardly partially toward a center of the shaft and tapers to a reduced diameter and at a first angle from an exterior surface of the shaft;

- 15 forming a second angled portion that angles outwardly from the reduced diameter and at a second angle from the exterior surface of the shaft; and

forming a neck region formed between the first angled portion and the second angled portion, wherein the neck region transitions from the first angled portion to the second angled portion.

20

16. The method of claim 15, with the first angled portion tapering substantially regularly to the reduced diameter and at the first angle.

17. The method of claim 15, with the second angled portion extending at least partially to the exterior surface and the normal diameter of the shaft.

25

18. The method of claim 14, further comprising forming a first radius on a first transition region between the normal belt position portion and the first angled portion, with the first radius forming a substantially smooth transition from the normal belt position portion to the first angled portion.

30

19. The method of claim 14, with the neck region comprising a neck radius forming a substantially smooth transition from the first angled portion to the second angled portion.

20. The method of claim 14, wherein a first angled portion dimension is less than a belt width of the belt.

5